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TUBERCULAR DISEASE OF BONE—PATHOLOGY AND TREATMENT.*

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Mr. President and Gentlemen:

There is no field of surgery at the present time in which greater diversity of opinion exists than in the treatment of tubercular joint disease. Extreme views are held, on the one hand, by surgeons who advise an early attack on the diseased articulation, and complete removal by exsection of the joint; on the other hand, another set of surgeons believe that rest for the joint, combined with a strict regime of constitutional treatment, will prove more satisfactory even in advanced disease. There exists yet another class of surgeons who advocate a middle course, and very recently the suggestion has been thrown out that simple incision into the joint may result favorably, much in the same way as an incision into the peritoneal cavity in tubercular peritonitis exercises a curative effect.† The present methods of treatment of tubercular disease in the shaft of a long bone are scarcely more satisfactory than are those adopted in joint diseases. The disease runs a tedious course, and after many months or years may end in extensive necrosis of the bone, and eventually the limb may have to be amputated. In more favorable cases the disease may have been checked and a cavity may be left in the interior of the bone, the walls of which are healthy. These cavities may close and the case terminate successfully, but very frequently the granulations lining the walls of such a cavity become unhealthy, and the healing process may be indefinitely postponed. A case came under my observation in which such a cavity of large size existed in the upper end of the tibia in a boy, which refused to heal. An attempt was made by introducing desilicated sponge, after the method of Hamilton,* to encourage the growth and deposition of healthy tissue in the part, but this failed, as did every other device. Eventually the limb had to be sacrificed and amputation was performed at the knee joint. Certain cases, however, progress to a successful termination; the disease is removed, the tissues take on a healthy action, and the limb is restored to a normal condition.

The development of tubercle in osseous tissue, in the early stages of the disease, has been studied more minutely in the articular ends of the bone rather than in the shaft. The reason for this is obvious; operative procedure has many times been resorted to very early in the treatment of tubercular joints, and the method of removing the end of the bone entire has rendered it possible to examine the condition of

*A Lecture delivered at the Post-Graduate Course of the University of Toronto, December 18th, 1890.

† *Lancet*, November 15th, 1890, page 1018.

* *Vide* Hamilton, *Edin. Med. Jour.*, November, 1881.

the tissue without disturbing the relation of the structures entering into its anatomy. On the other hand, it is rarely, if ever, the practice of the operator to exsect a portion of bone entire from the shaft; when disease exists there it is removed piecemeal, and the same opportunity is therefore not afforded for minute examination. The disease seems primarily to start in the cancellous tissue of the bone where small grey nodules may be found; these multiply and coalesce, forming irregular areas; the collection then tends to caseate. The cartilage over the articular surface of the affected area of bone may be normal in appearance. In a case of early hip-joint disease I assisted Mr. Watson Cheyne in the removal of the head and neck of the bone; the following appearances I quote from my notes of the case: "The articular cartilage seemed healthy, but the ligamentum teres was soft and of a somewhat gelatinous consistence. The appearance of the bone, on external examination, was normal; on making a longitudinal section through the neck and head it was found that the cartilage was separated from the osseous tissue below, on which it was freely movable; there was an inflammatory condition immediately beneath the cartilage; the bone in the immediate neighborhood was softened and carious; a small focus of yellow caseous material, the size of a threepenny piece, existed in the substance of the neck in the anterior and lower portions; another focus was present in the cut edge of the femoral neck; there had evidently been a portion of this focus left unremoved in the lower fragments of the femoral neck." These caseous foci may still further break down, and cavities may thus be formed; the tubercular network of osseous tissue being destroyed, the diseased area is surrounded by bone in a state of irritation, the blood vessels are dilated, exudation of the leucocytes occurs, and a collection of these cells, plus broken down tissue, is found in the cavities thus formed; we have in this way established a collection of pus in the cancellous tissue. The stages then in the development of tubercle may be summed up thus: (1) The typical grey tubercle; (2) the caseous mass; (3) the formation of a cavity; (4) a collection of pus with the entire destruction of the osseous tissue.

If we enquire for one moment into the minute anatomy of these conditions, we will find that the tubercular process, as manifested in bone, presents the same characteristics as it does in other tissues, modified somewhat, however, by the peculiarities of the osseous tissue in which it grows. If the grey tubercle be examined under the microscope we find one or more giant cells; surrounding these is a zone of cells of irregular outline, and outside these again a zone of round cells like leucocytes Between the cells is a network of fibrous filaments. These appearances are so familiar that I need only mention them. A necessary item, however, among the constituents of the tubercular nodule is the bacillus tuberculosis, which is, we are bound to consider, always present, at all events during the earlier stages of the development of the mass. The life history of the nodule is determined by the fact that it is extravascular; there are no blood vessels among the cells; the osseous tissue in the immediate neighborhood shows an increased vascularity and an increase in the number of cells; these blood vessels, however, do not enter the nodule. A study of these special characteristics enables us to understand the peculiar features presented by tubercle. The fact that it is non-vascular explains the fact that these nodules do not grow beyond a certain size; further, the nutrition being necessarily defective, the nodules tend to undergo retrogressive changes, and we have, in consequence, fatty degeneration, the formation of a necrotic mass, and finally a caseous nodule is produced. We may find tubercle in isolated patches or nodules such as I have described, or, what is more common, a number of these coalesce and form an irregular mass of cells, which will eventually undergo retrogressive changes. The tubercular nodule does not always caseate; occasionally we find a sclerosed condition at the seat of the disease; this condition of affairs* has been described as follows: In the centre we find an accumulation of cells such as I have described. Immediately beyond this there is a growth of osteoblasts, deeply colored; this color, it is suggested, may be due to the presence of micro-organisms. After a time the osteoblasts form a mass of sclerosed bone; in fact, we have a tubercular deposit to begin with, which engenders a condensing osteitis in a limited area of bone, and so the formation of a non-vascular solid

*Macnamara: *Diseases of Bone and Joints*, p. 108.

lump is the result; this may be in the very centre of the cancellous tissue of one of the growing bones. This sclerosed mass acts as a foreign body, sets up irritation, and may be the source of an inflammatory and suppurative process in the surrounding bone.

Tubercular caries. By the term "caries" is meant a gradual destruction and liquefaction of the bone elements, the results of an inflammatory process. This may be brought about by more than one set of pathological changes, but that a particular variety of caries is due to tubercular osteitis is beyond a doubt. In certain cases of caries we find tubercle in the affected bone; we find also that caries of the articular end of a bone is often a secondary development in typical cases of white swelling of the joint; then again, the bacillus tuberculosis has been demonstrated in the discharges* from an abscess dependent upon caries of the bone. Bacilli can scarcely ever be thus demonstrated in the pus, but that their spores are there can be shown by inoculation on the rabbit's eye.† The effect of a tubercular osteitis is to cause the bone to soften, the medullary tissue disappears, the cancellous trabeculæ are gradually destroyed; the bone in this way becomes first friable, so that if a probe were introduced and gentle pressure made upon it, it would readily be made to penetrate the friable tissue, which gives way before it; eventually a cavity is formed; when complete destruction of the osseous tissue has taken place, this cavity is filled with earthy granular particles, broken down cells, blood corpuscles, oil globules, and pus cells. In tubercular caries, therefore, we have a molecular disintegration of osseous tissue, the result of a previous tubercular osteitis; in this way an abscess is formed which may be restricted to the interior of the bone, or it may burrow in the adjacent soft parts, forming what is known as a cold abscess; these abscesses may point on the surface and open spontaneously, leaving fistulous tracks along which the discharge finds its way. Unhealthy florid granulations spring up and line the walls of such sinuses, and an exuberant growth of this granulation tissue exists about the mouth of the sinus. If the abscess remains unopened, we have a process of chronic inflammation in the soft tissues which form the abscess walls; this causes a thickening and condensation of the connective tissue, the innermost layers of which are badly nourished, and finally perish and are cast off into the abscess cavity as slough and shreds of gelatinous tissue in a necrotic state. The inflammatory process then attacks more extensive areas of the soft tissues as the abscess increases in size, and the wall of the abscess towards the cavity continues to cast off sloughs in the manner indicated

The condition of caries as restricted to the bone itself may extend indefinitely, and cases occur in which the entire bone in this way ulcerates, but it is more usual for the bone in the immediate neighborhood to become the seat of a chronic inflammatory process which leads to condensation and thickening of the surrounding bone; thus a carious cavity may be bounded by walls of sclerosed bone.

Caries-Necrotica. The process of liquefaction may continue solely as such, or there may be along with it death of comparatively large areas of bone, thus forming sequestra. There are two ways in which portions of bone may thus perish. We have seen that occasionally accompanying the production of tubercle we have a sclerosed mass of bone immediately surrounding a caseous nodule; this is non-vascular, and remains as a necrotic nodule, exciting irritation in its immediate neighborhood as a foreign body; this is a sequestrum really of of new formation. More frequently we find thin lamellæ of bone lying loose in the carious cavity; these portions of necrotic bone are cast off in the same manner as sloughs are detached from the abscess wall in the soft parts. The area of caries is surrounded by bone in the condition of condensing osteitis. As the sclerotic process advances, the Haversian canals are obliterated during the chronic inflammatory process in the compact bone, and the vascular supply cut off, or the vessels suffer from direct pressure of inflammatory effusion in the cancellous tissue. This occurs more particularly in the deeper layers of the sclerosed wall, and as a result, sequestra are cast off and are found lying free in the carious cavity. The conditions which determine the separation of a portion of bone in this way are dependent upon an exacerbation in the inflammatory process surrounding the diseased area. If caries run a slow course, and, during

*Roberts' *Modern Surgery*, p. 314.

†Erichsen: *Science and Art of Surgery*, 9th ed., vol. I., p. 1089

the disease, the limb is not submitted to any sort of injury or unrest which might determine a certain degree of irritation in the affected part, then we shall probably have the disease running a course of caries pure and simple; if, however, the process be a rapid one, or if inflammation is increased in the parts by injury or manipulation, or possibly by some general constitutional disturbance, then follows an extra amount of inflammatory effusion, pressure on the vessels in a confined area, and, consequently, death of the tissue from defective blood supply.

Necrosis. This is more common in the compact bone. In this condition the tubercular osteitis spreads rapidly throughout a large area of bone, and before liquefaction can occur, *i.e.*, before sufficient time has elapsed for the complete disintegration of the osseous tissue, the portion of bone affected is killed *en masse*, and a large sequestrum is formed; this sequestrum is set free by absorption of the bone in the inflamed area. The osseous tissue in the line of separation exhibits appearances similar to that found in caries; the inflammation here is of a specific nature and is in reality a condition of tubercular osteitis. Beyond this, again, the living bone is undergoing a process of condensing osteitis, so that there is great thickening of the shaft of the bone. Thus we have in tubercular necrosis to deal with three zones of diseased tissue, (1) the sequestrum, (2) the area of rarefying tubercular osteitis, (3) the areas of condensing osteitis. (The specimen exhibited demonstrates the condition described.)

I have now completed the description of the pathological phenomena observable in conditions of tubercular affections of bone, and you will observe that three distinct clinical varieties present themselves. Of these, caries is more common in cancellous tissue, in the articular extremities of long bone, and in the bones of the carpus and tarsus. It is also familiar in caries of the vertebræ, constituting what is known as Potts' disease. We may, however, find caries affecting any of the bones of the skeleton. Caries necrotica is met with chiefly in the shaft of long bones, and tubercular necrosis in the same situation. The condition described by the older writers as spina ventosa is primarily a tubercular osteitis, causing expansion of the medullary cavity, softening of the spongy bone, with thickening and infiltration of the periosteum and soft parts surrounding. The disease is confined to children and young adults. It is said that the first metatarsal is most frequently affected; next the first phalanx of the middle finger; then the thumb; rarely in some other part of the body. Caries without suppuration—"dry caries" so-called—occurs occasionally in the spine, and in that situation is not an uncommon condition; such phenomena are, however, manifested in other parts of the skeleton. Mr. Hutchinson* recorded a case of caries of the articular surfaces of the knee-joint, without suppuration; the specimen was subsequently examined by Mr. Eve, and typical tuberculosis found.†

Tubercular Periostitis. Periostum may be the seat of the primary tubercular disease. The close association of the periostum with the bone renders it extremely unlikely that the disease will progress to any extent in the former without leading to affection of the bone secondarily.

Acute inflammation of bone is extremely rare. It is a question for investigation whether some cases of acute epiphysitis occurring in young children may or may not be of tubercular origin.

Treatment. In considering the method of treatment, the question at once suggests itself as to whether it is possible for a cure to be effected without operative interference. It seems probable that the tubercular nodule at an early stage of its development may resolve, that is before there has been complete disintegration of the osseous tissue and a necrotic mass formed. Then, again, we are familiar with the existence of tubercular masses in the soft tissues which have lost their vitality, or which remain in a state of quiescence without giving rise to discomfort. Such cases of old tubercular disease are common in pulmonary tissue, and are frequently found in the lungs at a *post mortem* examination. Then, again, lymphatic glands after an active tubercular inflammation may remain without giving rise to discomfort, as a mass of inert and non-irritating tissue, for a whole lifetime. In the same way we believe that tubercular disease in bone may run a similar course. There can be no doubt, however, of the fact that although resolution is the best event that can possibly follow the tubercular process; the

* *Transactions Pathological Society of London*, vol. xxxviii., p. 312, 1887. † *Transactions Pathological Society of London*, vol. xxxix., p. 267, 1888.

condition of quiescence without resolution is one of questionable security. There is a liability at any future time for the disease to light up afresh; this probably is accountable for those cases of hip-joint disease which recur after an apparent cure. Constitutional treatment is in all cases of great importance. This consists in good nourishing food, fresh air—sea air if possible—and exercise, combined with the administration of cod liver oil, iron, the syrup of the hypophosphites, phosphorus, or some other equally good form of tonic.

In the early stage of the disease we may hope for resolution, and we must encourage this; the indications are, first, perfect rest for the diseased bone; this may be accomplished without interfering with exercise. Wherever we have to deal with tubercular disease, it is of very great importance that we interfere as little as possible with the free permission given to the patient to take all the exercise which the inclination dictates, avoiding exhaustion. If, however, exercise for any reason be incompatible with rest for the diseased bone, then the latter must always be considered the more important indication, and on no account must we allow anything to be a cause of unrest in the affected tissue in which we are hoping for the process of resolution. The method by which we can secure rest must vary according to the position and the extent of the disease. Macnamara* records a case of early tubercular disease in the os calcis treated with perfect success by the application of suitable apparatus. The beneficial effect of rest, combined with exercise, in caries, is exemplified in the use of the various forms of fixation apparatus used in joint affections, but a striking instance of it is seen in cases of tubercular caries in the spine. The treatment by the application of plaster of paris jackets, as introduced by Dr. Sayre, of New York, has yielded excellent results, and this method of treatment is now all but universally employed in spinal caries. The principles involved in the treatment are the same whether the jacket be made of plaster or poro-plastic material. The method of applying the plaster of paris jacket so as to fix the spine in the position of extension, and thus prevent pressure of the diseased surfaces together, has, until recently, been by the use of suspension—the block-and-tackle apparatus being used after the manner with which, you are all familiar. The method suggested by Mr. R. Davy,* however, will be found quite efficacious, and probably more effectual in attaining the desired result. I refer to the method of slinging the patient in a hammock composed of some soft material, *e.g.*, cheese cloth. The patient lies on his face in the hammock, and the plaster is applied, the bandages being applied over the portion of the hammock lying in contact with the body. As the patient lies thus on his face in a hammock which is suspended at either end, there is very complete extension of the spine, and the plaster jacket secures it thus

FIG. 1.

in the desired position. When the plaster has dried, the portion of the hammock above and below the jacket is cut away. When the cervical vertebræ are affected a different form of apparatus must be used. We combine with the jacket a jury-mast to support the head. I show you here a patient treated on these principles; (Fig. 1) instead of the ordinary jury-mast I have had substituted a croquet-hoop apparatus, first suggested by Dr. Elliott;† this is more convenient than the jury-mast, as it allows the patient to lie flat on her back without inconvenience, and is not as awkward as the ordinary apparatus. The patient wears a poro-plastic jacket, to which the

*Macnamara: *Diseases of Bones and Joints*, p. 121.

**British Medical Journal*, July, 1885.
†*British Medical Journal*, Jan., 1884.

head support is attached. On admission to the Children's Hospital she was complaining of a considerable amount of pain. After lying in bed, with extension applied to the head, for some weeks, the apparatus which you see was applied, and she was allowed to run about. She has been at the Home on the Island all summer, playing about in the sand; she has had no pain nor discomfort since the jacket was applied, and her general health is excellent.*

When the long bones are affected, or the small bones of the foot or hand, fixation (suitable) must be provided, keeping the same principles of treatment by rest in view. When the disease is situated in such a position that counter-irritation may be combined with the treatment by rest, then the tincture of iodine painted over the part will be found serviceable. This will not be found of much value in spinal caries, possibly because the seat of the disease is too far removed from the surface. Indeed it seems just as legitimate to my mind, if the theory of reflex nervous action be accountable for the affect of the counter-irritation, to apply the counter-irritant to the flanks or the front of the belly as it is to apply it to the back, when the bodies of the dorsal vertebræ are affected, the nerve connections with the vertebral bodies being quite as intimate in the one case as in the other.

The operative treatment must now be briefly considered. In speaking of this I entirely exclude joint disease from my remarks, as this will be spoken of by the lecturers who follow me. The indications for operative interference are dependent to a great extent on the part of the skeleton affected. Spinal caries is seldom dealt with in this way unless there be an abscess developed in connection with it. First, then, we may consider that the formation of an abscess or the existence of a discharging sinus is always an indication for surgical interference. Then, again, where the disease is extensive, affecting perhaps a bone of the hand or foot in its entirety; where the disease is near a joint, and by its tendency to spread threatens to implicate the articulation, in these cases, too, the disease is oftentimes situated near the epiphyseal cartilage, and in young people the growth of the bone may be interfered with if the process of destruction at this point be not terminated; pain of great severity, is rarely the indication, but is to be considered in deciding upon a course of treatment in a given case. Lastly, I would mention that in certain cases where there are indications of pulmonary tuberculosis, far from this being a contra indication, I believe that if there be a primary affection of the bone it ought to be treated surgically and the disease removed. It may be that the diseased bone is a source of infection for the system generally and that a tubercular lung affection of recent origin may entirely disapppear if the tubercular disease of the bone be dealt with.

When an operation is undertaken the method of procedure must be decided on the merits of the individual case; the disease must be entirely removed, and the cavity left must be surrounded by healthy bone tissue and entirely free from any irritating discharge. An attempt must be made to set up a healthy action in the wound, with the hope that it will close by the development of healthy granulation tissues. Let me quote a case by way of illustration. A boy, æt. 11, was admitted into the Children's Hospital with extensive disease in the shaft of the right tibia and in the left internal malleolus. There was found a condition of caries in both situations with the existence of sinuses. All unhealthy granulations were scraped away. The bone was scraped by means of a Volkmann's spoon; in this way all the soft and unhealthy bone was removed, leaving a cavity with firm walls; this was thoroughly irrigated with perchloride of mercury 1-2000, and then stuffed with lint, soaked in chloride of zinc, 40 grs. to the ounce, and stuffing was left in for half an hour and then removed, after which the cavity was dusted with iodoform and was stuffed with lint, soaked in 1-2000 perchloride of mercury; an antiseptic pad was applied and secured by bandage; the left internal malleolus was treated in the same fashion. The object of such a method of treatment is, first of all, to remove the disease thoroughly, and then to leave healthy tissue behind. The effect of the chloride of zinc in strong solution is beneficial; it causes a microscopic sloughing of the surface of the tissue to which it

*Since writing this lecture I have incorporated the croquet-hoop apparatus in a plaster jacket. This was done in the case of a patient two years of age, suffering from cervical caries. The result has been all that could be desired; the child has lost all pain, and, while she was previously fretful and irritable, she is now cheerful and bright, suffering no discomfort whatever.

is applied. The slough is formed apparently by a mixture of the chloride with the tissue; the slough remains as a thin film and protects the tissues beneath from further action of the solution, while at the same time it provides an excellent barrier against septic infection; the process of suppuration in a cavity so treated is entirely suspended for about forty-eight hours. Let me here caution you against the use of a solution of chloride of zinc of weak solution. This acts as an irritant in the tissues. Last summer I operated in a case of caries of the tarsal bones, and after removing the diseased bone I asked for a solution of chloride of zinc, 40 grs. to the oz., with which I stuffed the cavity. I discovered the following day that the solution was not 40 grs. to the oz., but very much weaker. The patient suffered extremely for some days after the operation, and I attributed it, whether rightly or wrongly, to the weak solution of chloride of zinc; it was not of sufficient strength to kill the tissue outright, but soaked into the tissues and acted as a strong irritant, setting up a degree of inflammation which continued despite all our efforts to get the cavity cleared out by irrigation. Finally, after ten days, during which the patient suffered great pain, I performed a second operation, scraped away all the irritating material from the walls of the cavity, and stuffed it with lint soaked in perchloride of mercury. Subsequently there was little pain, and the cavity entirely closed.

These cavities are slow to heal. The process of healing by granulation in an ulcer in the bone is of necessity very slow. Then, again, there is always a danger of these granulations becoming themselves the site of a tubercular process necessitating their removal by operation. All that surgery can do in these cases at present is, first of all, to remove the disease entirely; and, secondly, to treat the case subsequently in such a fashion as to secure, if possible, a healthy healing process. After operation a healthy action of the tissues is to be maintained by frequent dressing and irrigation with some non-irritating lotion, such as boracic acid.

What are the causes of failure in our treatment? Our interference surgically may set up such a degree of inflammation in the walls of the cavity, which are already the seat of condensing osteitis, that the effusion may cause pressure on the blood-vessels, and finally their obliteration, the result being that a necrosis takes place. It is of frequent occurrence in these cases to find thin lamellæ of bone cast off and coming away in the discharges, perhaps weeks after an operation. Then the granulations may, as I have stated, become the seat of a tubercular process; therefore it is that oftentimes all our best efforts to bring these cases to a successful termination fail, and finally we may have to resort to amputation of a limb, when the disease has become extensive, or the tubercular affection may have become general, and our patient may die of tubercular meningitis or phthisis pulmonalis.

The special efficacy of iodoform in treating the tubercular disease of bone is still a question of dispute; injections after the method of Verneuill are not favored by Dollinger, who found that in children they did not induce recovery in a single case; that injection of small amounts produce deafness, headache, and nausea; of larger quantities, loss of consciousness, impaired respiration, and acute cystitis. At the moment of injection some headache might be felt, and there might even be a rise of temperature three or four degrees F. The rapid evaporation of the ether may cause necrosis of the abscess wall, and if, for example, a psoas abscess should burst into the peritoneal cavity, death might result from such an injection. Iodoform oil, one in five, has been recommended for abscesses. It is said to cause a disappearance of the tubercle in the abscess wall. Of 109 cases treated one-third were apparently cured, and as many more improved; the small amount injected, 32 to 59 minims, will not cause iodoform poisoning.*

In concluding this paper, let me refer briefly to the treatment of cold abscesses formed in connection with tubercular disease of bone. The walls of the abscess cavity I have already described. The indications are to remove all the sloughs and gelatinous tissue, and to leave a wall of comparatively healthy tissue upon which granulation may spring up, which may eventually lead to a closure of the cavity. Formerly it has been the custom to scrape the abscess wall with a Volkmann's spoon; this, in addition to removing the sloughs, is apt to cause too much destruction of the tissue forming the wall. It

*Sajous: *Annual of the Medical Sciences*, 1890.

causes, in fact, so much destruction and inflammation that further sloughing is apt to take place, and the formation of granulation tissue is postponed. The method recently suggested by Mr. Caird in the *Edinburgh Medical Journal*, of scraping the abscess walls with the finger-nail, is much preferable.* Here we are guided by the sense of touch, and can readily feel when the wall is left smooth and free from shreds and sloughs. The abscess wall after such treatment readily takes on healthy action and the healing process is facilitated. Mr. Caird reports cases of a large gluteal abscess of two years' duration closed in three weeks, a double psoas abscess dependent upon Potts' disease healed in six weeks, and some other similar cases, successfully treated in this way. Dr. Cameron recently treated a tubercular abscess in the neck, of some years standing, in this way with excellent results. The abscess healed without any discharge of pus. These chronic abscesses are apt to become septic when opened. I use the term "septic" advisedly. In the chronic abscess we have the specific virus of tubercle occupying the field, but once give an opportunity for the entrance of those organisms, which are ordinarily accountable for septic changes in an open wound, and we have the whole aspect of affairs changed. We now have to fight a new enemy; the clinical phenomena formerly of a chronic nature now take on an acute action, and we then speak of the abscesses becoming septic, and the danger of general septic poisoning is greatly increased. In addition to the danger of becoming septic, these abscesses are liable to absorb materials thrown into the cavity, and therefore strong germicides must not be used because of the danger of producing toxic effects. The reason is that the walls of the chronic abscess are vascular and are not protected by granulation tissue. The lotion, whatever it may be, is readily absorbed, and if any sloughs or shreds of tissue line its walls, these take up the lotion like a sponge, and it is thus applied to the vascular walls beneath, and absorption takes place. Once granulation springs up the risk of absorption and septic infection diminish. Thus we recognize clinically the fact that chronic abscesses, when first opened, are very apt to become septic and to produce general septicæmia; but after a few days or weeks the granulations form a protective barrier, and the abscess, though open, is not so prone to become a source of danger. This explains the dread the older surgeons had of opening chronic abscesses, it was so frequently followed by septicæmia. Now, with antiseptic precautions, we can attack such collections without dread of such an unfortunate result.

Abscesses in connection with spinal caries forming a collection under the psoas fascia should be opened in the loin after Treves'* method. This affords one a better opportunity of keeping it aseptic than if it were opened in the thigh. A case in the Children's Hospital, in which a large collection was pointing in the thigh, I successfully reached by the lumbar incision. The case did well, and although an opening occurred spontaneously in the thigh two or three months after, still sufficient time had elapsed for the lining of the abscess wall with granulations to occur, and when the second opening formed the danger of septic infection had very much diminished.

Edin. Med. Jour., September, 1890, page 226.

*Barker: *Manual of Surgical Operations*, page 111.

PRIMARY LARYNGEAL DIPHTHERIA IN THE ADULT.†

BY ALEXANDER M'PHEDRAN, M.B.
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Eva W., æt. 20, a public school-teacher, was not very well during the year. Has frequently had trouble with her throat, with hoarseness. On Sunday, 21st December, 1890, was somewhat hoarse and not feeling very well. She went to the school-room on Monday, and sat there for some time with the thermometer at 48°. By evening aphonia was complete. Had an attack of dyspnœa, which, in going to seek aid, was relieved by the cold air. I saw her after another attack, at 5 a.m. on Tuesday morning, 23rd December. The tonsils, pharynx, etc., were normal then, no swelling of cervical glands, the breathing quiet. With a defective laryngeal mirror the larynx appeared pale and somewhat swollen; temperature, 102°. The breathing was quiet all day, and by evening the temperature had fallen to 100°.

On Wednesday, 24th, she had an extremely severe paroxysm at 2 a.m. At my request, Dr.

†A paper read before Toronto Medical Society, Mar. 19, 1891.

D. J. Gibb Wishart was sent for, and with his mirror the glottis was seen thickly covered with membranous deposit. On the right vocal cord the membrane was loose, and caused the paroxysm of dyspnœa; this membrane was removed by a probang covered with absorbent cotton; it was tinged with blood. On each tonsil were several pultaceous deposits; they were easily brushed off, leaving no abrasions, no enlargement of cervical glands. The membrane contained the Klebs-Lœffler bacillus of diphtheria in abundance, and very little inflammatory exudate. It was examined by Dr. Macallum of the Biological Laboratory. A solution of liquor potasii in lime-water (℥j. ad ℥j.) was applied to the larynx every hour by an atomizer. At first gr. x. papoid was added to this, but as it clogged the atomizer tube it was omitted, probably without lessening the usefulness of the application. Internally she took tr. ferri. mur. m. xv. hydrargyri perchloridi gr. $\frac{1}{40}$ m. solution, every two hours. As much liquid nourishment as possible was partaken of.

Dyspnœa became quite distressing again about noon, and arrangements were made for intubation and tracheotomy. During the afternoon she coughed some membrane, and relief followed. In the evening she felt much better; no membrane was to be seen, but the cords looked reddish and swollen; temperature, $100\frac{1}{5}°$.

25th. During the night dyspnœa returned, and more membrane was seen on cords; it could not be removed by probe. Spray was used freely, and some pieces were coughed up towards morning. Breathing became easy, and she had several short sleeps during the day; temperature about 100°. Several small membranous patches appeared on tonsils, with some diffused redness.

26th. 10 a.m., temperature, 100°; pulse 98. Coughed up much membrane during the night. Mirror showed thin coating of glottis instead of thick membrane. Fauces redder; considerable pain in left side on swallowing, and slight swelling of the cervical glands. The yolks of two eggs were added to the daily diet.

Dyspnœa becoming distressing in the evening, Dr. W. J. Wilson, of Richmond Hill, her family physician, saw her with Dr. Wishart and myself. She had coughed up much membrane with but little relief, and the symptoms pointed to extension of membrane down the trachea. The treatment was continued, and turpentine was constantly vaporized in the room in a tin floating on a solution of carbolic acid (1 in 20) kept boiling over a gas jet.

During the next day she coughed up much membrane, and a little the day following, after which no more was expectorated. The temperature became normal. On 31st the vocal cords were clean but swollen. Only a whispering voice. The swelling of the cervical glands, which had only been slight, gradually disappeared. She continued to improve, and was able for the journey home to Richmond Hill by January 14th. She had been taking the iron freely, the mercurial having been omitted with the abatement of the disease. She was using an alkaline antiseptic solution as a spray. She has now recovered her usual health and resumed her professional duties.

Had this patient been a child, she would no doubt have gone the way of all other cases of laryngeal diphtheria it has been my misfortune to meet. Her recovery is due to having a fully developed larynx, being able to carry out treatment fully and persistently, and being able to resist the constitutional poisoning.

Since Klebs in 1883, and Lœffler in 1884, announced the discovery of a bacillus as constantly present in the membrane in all cases of true primary diphtheria, the researches of a large number of bacteriologists have all but proved this bacillus not only present in the membrane, but as the cause of this dread disease. It was found in great abundance, singly and in clumps, in the membrane from this girl's throat, whose general condition left no doubt of the truly diphtheritic nature of the affection.

This bacillus is found only in the exudate and not in the blood, the lymphatic glands, or any organs, not even in the affected mucous membrane itself. The constitutional symptoms and lesions of internal organs as lymphatic glands, spleen, kidneys, etc., are caused by extraordinarily poisonous substances of the nature of toxic albumins, absorbed from the site of local inoculation of the bacilli. These septic substances have been separated, and being injected have produced all the phenomena of diphtheria, save the membranous deposit.

In the experimental production of diphtheria it has been found insufficient to simply apply the bacillus to the mucous membrane; an abrasion is required to enable it to multiply and produce the typical local lesion. This probably holds true in the human being also; at least many persons are more susceptible than others, and children, in whom the structures of the throat are delicate, are much more readily affected than adults. This being so, then, in the case related, the chronically unhealthy state of the throat with the acquired recent catarrhal inflammation, made worse by sitting so long in the cold school-room, converted the laryngeal mucous membrane into suitable soil for the inoculation of the bacillus diphtheria, which she happened to inhale somewhere at the time.

Should this bacillary theory of diphtheria stand the test of thorough investigation, it will prove of the utmost practical importance in enabling us to reach a positive diagnosis in all suspicious cases, as, *e.g.*, in cases of follicular tonsillitis. A small particle of the exudate can be removed, put on a cover slip and stained, when the presence or absence of the Klebs-Lœffler bacillus can be readily ascertained by the microscope. It is to be remembered, however, that there is a pseudo-bacillus often found in the mouths of healthy children, as well as in those suffering from simple inflammations of the throat. It appears to be always much less numerous and to differ in shape from the bacillus of true diphtheria.

There seems no longer any room to doubt that pseudo-membranous exudate may be produced on any mucous surface, even in the pharynx, by a variety of irritants, if sufficiently severe, as, *e.g.*, high-pressure steam, some chemical irritants, as liquor, ammonia, and probably organic ones also; and therefore a membranous exudate in any situation is not sufficient to establish a diagnosis of diphtheria. This ends the old controversy about the possibility of the occurrence of membranous croup other than diphtheritic. This is but another illustration of the truth that with increased knowledge comes the increased ability to defferentiate into different diseases what have been apparently but different phases of the same disease, as occurred long years ago in regard to typhus and typhoid fevers. It should be observed, however, that membranous exudate is, nevertheless, of diphtheritic origin in the vast majority of cases.

An equally interesting and practically important question is whether diphtheria always gives rise to a membranous exudation, or if the exudation is not, in occasional cases, catarrhal only, no membrane being present at any period of the attack. We occasionally meet with cases in which no membrane is visible, yet with such well-marked phenomena as albuminuria, loss of knee-jerk, and various forms of paralyses. It may be objected that the membranous deposit occurs in some place beyond observation, yet in many, if not in all of these, there is a catarrhal condition of the tonsils and pharynx that offers a favorable nidus for the development of the bacterium. As examples of these, we may refer to many cases of diphtheria of the larynx in which no disease occurs in the pharynx, although it is inflamed and secreting muco-pus. In this muco-pus the Klebs-Loffler bacillus has been found by Wesh and Abbott in a case of laryngeal diphtheria;* and the inoculation of a guinea-pig with the cultures of these germs caused death in three days, with characteristic symptoms.

Another class of cases that indicate that diphtheritic irritation may cause catarrhal inflammation only consists in those in whom only very small spots of exudation occur although the general inflammation of the throat is well marked. A good illustration of these occurred in the case of a young physician a few years ago. He had been attending several exceedingly severe cases of diphtheria. Becoming indisposed he remained in bed, and when I saw him his throat was red, slightly swollen, painful on swallowing, and the cervical glands were somewhat enlarged and tender, but there was no membrane; temperature, 102°. Next morning there were two tiny pieces of exudation on the right tonsil; they did not yield to gentle brushing. The general condition of the throat continued as on the previous day. By the afternoon the exudations had disappeared, and no more formed. He was convalescent in a few days, but partial paralysis of the palate and pharynx followed, and such general muscular weakness that he could mount a street-car only with much difficulty for months afterwards, and

*Bulletin of the Johns Hopkins Hospital, Vol. ii., No. 11.

the climbing of stairs caused a feeling of prostration and severe palpitation. There can be no doubt of the existence of diphtheria in this case, yet the local exudation was practically only catarrhal. Doubtless, had an examination been made, the bacillus would have been found in the pharyngeal secretion. Such cases are, of course, quite as dangerous sources of infection to those exposed as any with membranous exudation.

If the bacillar theory of diphtheria be true it enforces the desirability of securing as healthy a condition of the throat as is possible, especially in children, so as to decrease the liability to contract the contagion. Should exposure occur, then the throat should be frequently inspected —daily or oftener—and cleansing antiseptic lotions should be freely used to remove all secretion in which bacteria could effect a lodgment.

Accepting the theory of diphtheria as a local disease, with subsequent constitutional poisoning, we are entitled to expect more of local treatment if begun early, before membrane has had time to form. Our applications must be ineffective, or else they do not gain access to all the primarily affected parts. When caustics were in vogue, doubtless some infected parts escaped the application and the remaining bacilli multiplied the more rapidly on account of the inflammatory process that followed. The applications of perchloride of mercury solutions will also probably fail, as its action would at once encase the germ in a covering of coagulated albumin that would afford protection against further injury. This is what seems to occur, at least when the bacillus tuberculosis is treated with it. Carbolic acid solution might serve a better purpose if it could be used sufficiently strong. As yet, however, we know of no application that meets the requirements of the case. Much may be hoped for soon, as there seems to be now a more intelligent basis on which to work. Probably in the end more may be effected by prophylaxis than by treatment.

It is reported that Frankel and Behring have succeeded in producing immunity in animals by certain processes of inoculation, and that the blood-serum of such animals is capable of destroying or nullifying the effect of the toxic albumins of diphtheria, although not of killing the bacillus itself. If such be the case, a new era may be dawning in the treatment of this, one of the most dread visitants to a household.

KOCH'S TREATMENT OF TUBERCULOSIS.

BY PROF. R. RAMSAY WRIGHT.

Communicated from Berlin to the University of Toronto.

Since my last letter nothing of special interest has occurred in Berlin.

The Prussian Minister of Education, Von Gossler, has resigned, and his resignation is regretted by scientific and medical circles, as he had always taken the liveliest interest in matters pertaining to them. His too great enthusiasm, as it is generally described, in the Koch affair, can hardly have had anything to do with his resignation, for the separate institute, which he promised Koch, has now been approved in committee, and will soon be submitted to the Landtag. This will, no doubt, be very pleasing to Koch, and will make his return to Berlin, which is expected in a fortnight, somewhat more agreeable than it otherwise would have been.

The new institute is only to have a formal connection with the university, and Koch will have no teaching duties, which he detests. Whether his other suggestions as to the institute are to be carried out or not remain to be seen; but it is rumored that Brieger will not have sole charge of the Clinical Department, that it will be under the administration of the Charité, and that there will be no special pathologist appointed for it.

The pavilions of this new Clinical Department are well advanced; the walls are of a new building material, "plaster boards," and have been constructed at a comparatively small cost. The new institute, on the other hand, is an old, many-windowed building, near the Charité, the inside of which is being torn out to form larger rooms, and the process appears to be a very slow one.

Contributions to the Koch treatment continue to flow into the medical papers, but they contain little which has not already been published. It is important to note the increased hopefulness of the tone of these contributions, which well express the conviction that tuberculin is a wonderful specific remedy, the clinical use of which must be slowly

and carefully studied out. One interesting case is published by Landgraf, of a tuberculous tumor of the iris, in which he was able to follow the process of acute caseation of the tumor which resulted from the treatment. The sight improved, and there is now no prospect of the extension of the tubercular process which, in the ordinary course of events, would soon have rendered enucleation necessary. In the course of the treatment he observed the formation of two miliary tubercles in the iris, which, however, soon disappeared.

Lœffler has recently published an interesting lecture on the clinical interpretation of certain laboratory experiments in diphtheria. He endeavored to imitate in test tubes the action of gargles, (1) from a prophylactic standpoint in times of danger; (2) after the formation of the false membrane.

He used an oblique surface, formed of four parts of ox-blood serum and one part of neutral bouillon, to which 1 per cent. peptone, 1 per cent. grape sugar, and 0.5 per cent. common salt, had been added. The experimental cultures were kept very carefully at blood temperature.

Immediately after a fresh culture was made on such a surface, the surface was washed for from ten to thirty seconds with the remedy to be tested, and the culture then placed for eight days in the incubator. The absence or presence of growth at the end of this time was taken as an index of the prophylactic value of certain gargles, and Lœffler concludes that the most efficacious of these in practice would be a sublimate solution of 1 to 10 or 15,000 for 5 to 10 seconds every three to four hours. Cyanide of mercury, however, in solution of 1 to 8 or 10,000, might be substituted for the above as less unpleasant. He found also efficacious chlorine water 1 to 1,100, and thymol 1 in 500 parts of 20 per cent. alcohol.

For reaching effectually the upper part of the pharynx he recommends Feldbausch's metallic nasal tubes, stopped with cotton impregnated with various essential oils, such as eucalyptol.

The solutions named were found to have comparatively little efficacy if the culture had been allowed to grow in the first place to the thickness of one-half milligram, and thus formed a sort of false membrane protecting the deeper infected surface of the serum.

For the corresponding cases in practice he recommends, in addition to frequent use of the above-named gargles, additional ones every three to four hours, with stronger culture-killing media, such as sublimate 1-1,000, carbolic acid 3 per cent. in 30 per cent. alcohol, and also 2 per cent. carbolic acid in equal parts of alcohol and turpentine. In the intervals pencilling with 5 per cent. carbolic, 2 per cent. bromine, 1 per cent. chlorine, or possibly also concentrated watery solutions of ortho and para kresol.

Much curiosity is felt as to Koch's attitude on his return from Egypt. He may be more communicative as to his methods, but in any case I hope to return to Toronto shortly thereafter.

Selections.

THE PRESENT POSITION OF ANTISEPTIC SURGERY.

The subjoined letters on the above subject, which we extract from the *University Medical Magazine*, will no doubt be read with interest by the profession:

To the Editors of the University Medical Magazine:

GENTLEMEN,—I enclose a copy of the letters which have recently been sent by Mr. Tait and myself to the *British Medical Journal* in reference to the subject of "The Present Position of Antiseptic Surgery." I would call attention to the fact that in the same journal for February 21, Mr. John D. Malcolm notes the want of agreement between some of Mr. Tait's statements as to the behavior of sponges left in the peritoneal cavity and the clinical facts.

He adds: "This is not remarkable when we consider that he avowedly laughs at the knowledge acquired from scientific experiment, and prefers to found his opinions upon the evidence of certain household customs, on which he has put an interpretation, the accuracy of which is not above suspicion."

I am, etc.,

March 18, 1891. J. WILLIAM WHITE.

SIR,—Professor White replies to my criticism of Sir Joseph Lister's Berlin address, a task which I think I may venture to say had better have been left to Sir Joseph himself.

Fortunately for my present purpose, Professor White puts the issue syllogistically, and formulates for both of us a major premise, upon the truth or error of which depends the whole conclusion; and I accept this issue freely. I say that germs of decomposition exist already in the blood and elsewhere in the body and are ever present, but do not bring about their results till death, or some condition which we call a tendency to death, gives them permission so to do. Professor White says that the elaborate and carefully-conducted experiments of Hauser, Watson Cheyne, and others, completely contradict the statement "which is really the foundation of Mr. Tait's argument."

In reply, I say I care not a straw for elaborate and carefully-conducted experiments, no matter at whose hands, when their conclusions are diametrically opposed to every-day experience. There must be an error in the experiment or in the minds of the experimenters—more probably in the latter. John Hughes Bennett and Arthur Gamgee, with others in the case, must be admitted to be skilled experimenters. By hundreds of experiments they showed that mercury has no action on the liver and secretion of bile, and that the absence of bile from the intestinal circulation of the animals experimented on killed them by slow starvation. But my daily experience and the daily experience of all humble unscientific practitioners like myself shows absolutely that mercury has a very potent influence on the liver and on the secretion of bile. My clinical experience shows, and it is published to the effect, that patients gain weight and improve in health whilst every particle of bile formed by them is pouring out of a fistula in their gall-bladders. Mayo Robson and others have confirmed this; therefore, we laugh at Bennett and his scientific experiments.

In the present case how are we to explain, on the germ theory, the occurrence of abscesses in closed cavities, such as joints or the pleura, or in muscular tissue—or, indeed, anywhere save in open wounds—unless the germ theory is a delusion, or unless germs are omnipresent, and are at times, and for reasons not understood, permitted to wreak their wicked wills? It is perfectly impossible to argue with people who cannot see such a self-evident proposition as this.

But the facts of decomposition—save their immediate microscopic causes—have been known for centuries, and it has been only our want of reasoning power which has prevented us applying the every-day facts of the housekeeper's room to the processes of disease. Let me quote a familiar example. A solid mass of beef—say, a bed and silverside—is removed from a perfectly healthy ox, and is put at once into a sound and healthy pickle. The pickle is a powerful antiseptic, and if the pickle reaches the middle of that beef before the germs contained in it have had time to start their work, the beef, in a few days or a week or two, will be fit to eat. But every housekeeper knows perfectly well that the result will depend absolutely upon the outside temperature. It would be absolutely impossible to pickle a piece of beef in August, which could be easily pickled at Christmas. Does Professor White imagine that during the few hours—it may be few minutes—that the beef is exposed to the air, it becomes impregnated with germs right to the centre, or is it not more consistent with common sense to believe that the germs were in it before it left the ox; and, therefore, in life? In truth, the facts of the housekeeper and the henwife are far more scientific, that is, far more exact, than those of our biological experimenters. They are in harmony with what I see in my work every day, and, therefore, it seems to me a perfect waste of time to follow Professor White beyond his own major premise, which is utterly mistaken.

I am, etc.,

Birmingham, LAWSON TAIT.

SIR,—As Sir Joseph Lister has usually ignored Mr. Tait's attacks, and as there seemed no reason why he should make the last one an exception, I ventured to reply to it, being impelled thereto not by any sense of peculiar fitness for the task, but by profound respect and warm personal regard for the author and exponent of the antiseptic theory, and by an abiding faith in the truth of that great surgical principle. A specific and utterly groundless charge contained in Mr. Tait's article as to the "deadly and dangerous" character of the double cyanide dressing, with which I have had a fairly large experience, and the use of

which I have been teaching to hundreds of young men at the University of Pennsylvania, supplied a further motive for the reply which, but for these reasons, might well, as Mr. Tait intimates, have been left to abler hands, if not to those of Lister himself.

In the communication in which Mr. Tait answers my paper there is, however, no evidence that he has anything to say which is worthy of Sir Joseph's attention. If his statements were as accurate as they are vigorous, or if the soundness and extent of his information were commensurate with the positiveness of his assertions, he would be a formidable controversial opponent; but the fact that he prefers the arguments as well as the literary style of the "housekeeper and the henwife" to those of biological experimenters materially lessens the value of his utterances. In the discussion of a scientific question of so much practical importance, I personally prefer to be guided by more accurate observations than those made by the average butcher or housewife in putting a piece of even a "perfectly healthy" ox into an equally "sound and healthy pickle!!"

My assertion was that "the fluids and tissues of the *healthy* living body are *practically* sterile." Mr. Tait says in contradiction "the germs of decomposition exist already in the blood and elsewhere in the body, and are ever present."

In support of my position, I may cite, in addition to the experiments of Hauser and Cheyne already mentioned, those of Pasteur, Meissner, Koch, Zahn, Fodor, Chiene, Ewarts, Rosenbach, Crookshank, and others, all of which are familiar to bacteriologists, but are useless in an attempt to instruct Mr. Tait on account of his partiality for what he calls "the every-day facts of the housekeeper's room." If he will consent to accept the every-day facts of the surgical ward instead, and will recall the almost invariable absence of putrefactive changes in simple fractures; in uncomplicated synovial effusions; in ovarian cysts; in contusions without solution of continuity; in pleural effusions, etc., he will realize that the germs of decomposition can scarcely be omnipresent, as he claims, as it would be "diametrically opposed to every-day experience," if their unvarying presence did not oftener give rise to the form of fermentation that we know as putrefaction.

Possibly, when Mr. Tait refers to the occurrence of abscess, etc., in closed cavities, in support of his position, he allows the difference between the germs of putrefaction and the microbes of suppuration temporarily to escape his memory, or, possibly, he purposely ignores this differentiation of such insignificant objects as it rests upon the evidence of gentlemen who waste their time in looking through microscopes and in comparing their observations and testing their results by biological experiment. If Mr. Tait had ever opened a true tuberculous psoas abscess or empyema without antiseptic precautions, he would have had an admirable "practical" opportunity of observing the effect of admitting germs, either of decomposition or of suppuration or both, to a fluid already containing the germs of tuberculosis, and would, perhaps, have avoided the appearance of ignorance as to some of the elementary facts of bacteriology.

There can be no doubt that pathogenic microbes do, now and then, gain access to the tissues of a healthy organism, but they are immediately and almost invariably eliminated by the excretory organs or destroyed by the action of the cells and fluids of the body. The interesting fact (I think, on the testimony of Rosenbach, Kocher, Becker, Krause, Ribbert, Steinthal and Kronlein, I may venture to call it a fact, though it is *not* an every-day one) that osteo myelitis occurs in a simple fracture after micrococci have been injected into the circulation, although previously the "omnipresent" germs have exerted no influence, would seem to emphasize the difference between the occasional and accidental admission of pathogenic microbes into a healthy body (which is not denied), and the effect of an increased dose of such microbes upon an organism in which there has been established a *locus minoris resistentiæ*.

Possibly in the few cases of empyema, joint-abscess, etc., which are not tuberculous (and therefore dependent upon a specific organism, which I suppose not even Mr. Tait would claim to be ever present), some such infection does occur, but at present demonstrative proof of the exact channel of contamination is want-

ing. It is, however, equally beyond doubt that in many of them an infection atrium exists, communicating with the cavity through the interstices of the tissues, or through the lymphatics. At any rate, it is a matter of common experience that such abscesses are exceedingly rare in non-tuberculous patients. Their occurrence, therefore, offers not the slightest justification for the sweeping assertion of Mr. Tait, who insists that we must either reject the germ theory of suppuration altogether or admit the "omnipresence" of the germs.

As to the "beef and pickle" argument, Mr. Tait surely did not realize that he was offering a "biological experiment" in evidence. If he did so deliberately, I would ask him to let me have the exact antiseptic value of the "powerful" pickle in its influence on both bacteria and spores; the methods used for disinfecting the cleaver and sterilizing the hands of the experimenter; the precautions taken in transferring the "bed and silverside" (whatever that may be) from the ox to the pickle, and such other information as may enable me to defend my major premise properly, or to renounce it if the "facts of the henwife and housekeeper" are really facts and are overwhelmingly against me.

The progressively improving results obtained by such experimenters as Meissner and Rosenbach in the preservation of portions of healthy animal tissue, by placing them with great quickness and scrupulous cleanliness in previously sterilized flasks, show the usual absence of germs in the healthy body, and serve at the same time to explain the failures of some earlier observers. As they acquired dexterity they became able to preserve in this way, without the use of any antiseptic solution, nearly every specimen.

In the face of such evidence as this, confirmed by other investigators, and reinforced by bacteriological study of the blood and tissues, statements as to the omnipresence of the germs and the consequent inutility of antiseptic treatment based on such insufficient grounds as those Mr. Tait advances are puerile. They would be laughable if the question involved was not one affecting human life.

I am, etc.,

J. WILLIAM WHITE.

Philadelphia.

IODOFORM INJECTIONS IN STRUMOUS JOINT DISEASE.—Prof Krause (Halle) records further results of his experience of this mode of treatment, and has applied it, not only, as previously, to severe and advanced cases, but also to the early manifestations of disease. Within two years he has so treated sixty-one cases, and in twenty-three of these cures have been obtained, while many are still under treatment, or so recent as to give as yet no security of permanent cure. The procedure is briefly as follows: Any abscesses present, whether of the joint or peri-articular, are evacuated through a trocar and canula such as is used for the abdomen; the cavities are washed out with 3 per cent. boric lotion till it returns clear, and then a 10 per cent. solution of iodoform in glycerine (or mucilage, glycerine, and water) is injected till the cavity is moderately distended. The quantity required varies from 10 to 80 grammes. In the earlier non-suppurative stage a smaller trocar is sufficient. After the injection the joint is moved and rubbed so as to diffuse the fluid over the surfaces. After two or three weeks this proceeding may be repeated, and after four to six applications of the treatment, the patients are practically cured with or without anchylosis, according to the stage at which the disease has arrived. During treatment the patients are not confined to bed.—*Edinburgh Medical Journal.*

TREATMENT OF PATIENTS IN VIENNA.—Probably one of the earliest impressions made upon an American at Vienna is the difference, carelessness, and even cruelty with which patients are often treated, and this is true of Germany as well as Austria. One sees painful operations done without anæsthesia, when the operator is pressed for time; he sees patients stripped, and then covered simply with towels wet in antiseptic solutions, and exposed to deadly chill during long operations in cold amphitheaters—the patient being often required to leave the room afterwards wet and naked. He sees women submit to vaginal examinations by a class of nine or ten students, her expressions of suffering being often repressed with great roughness; he sees pregnant women, and women already in labor, chloroformed, and measured, palpated, and examined, inside and

out, by classes similarly large, the narcosis terminating with the curiosity of the students. It is often a cause of wonder that so many patients live to establish the reputation of German and Austrian operators, and the question often arises, among the American spectators, whether hospital patients here are not tougher than with us. There is also often a lack of delicacy, not to say decency, in the conduct of hospital work. For instance, its takes the stranger from abroad quite aback to see the male patients of the skin and venereal clinics ushered entirely naked into the presence of the professor by a woman; and dressings and applications, even urethral injections, made by the same unblushing female. But these matters soon lose their early novelty, or are swallowed up in the interest which the great opportunities for observation excite.—*Med. Rec.*

THE OFFICIAL REPORT ON THE USE OF TUBERCULIN.—An official report has been issued by the German Government giving the results of the use of tuberculin in all the Prussian Universities. The report makes a ponderous volume of 900 pages, and contains the results of treatment, by over sixty physicians, of 1,769 cases. The diseases treated include tuberculosis in all its forms. The number of deaths occurring during the treatment was only fifty-five, and these were chiefly of persons suffering from advanced phthisis. In early phthisis there was not a single death. Among the joint cases there were six deaths. The number of cures, however, is also very small, being but thirteen among patients with internal tuberculosis, and fifteen among those with joint tuberculosis and lupus. There were, however, among 951 cases of phthisis, 171 cases markedly improved, 194 slightly improved, and 586 not improved. Among 683 cases of joint tuberculosis and lupus there were 148 considerably improved, 237 improved, and 298 not improved. Even allowing for insufficient lapse of time, and the necessary existence of many severe and ill-suited cases, the results are most discouraging. Among the seventeen hundred cases, one-half were not improved at all. Plainly tuberculin is very far from being the specific from which so much was hoped.—*Med. Rec.*

EXPERIENCE IN THE USE OF AXIS-TRACTION FORCEPS.—Nagel (Archiv f. Gyn., B. xxxix., H. 2). N. has operated with the Tarnier, Breus, and Simpson instruments, and he prefers the latter. He criticises the Tarnier forceps as being clumsy and having too slight a cranial curve. He objects to the Levret lock as superfluous and the tractors as complicated. Moreover, the Tarnier forceps easily slip and are liable to injure the scalp. The Simpson forceps has the advantage that it is light and easily used. It fully accomplishes the objects aimed at in the Tarnier and avoids as far as possible all superfluous attachments. The English lock suffices perfectly in axis-traction forceps since the blades are prevented from springing apart by the action of the fixation screw and the tractors. The construction of the tractors is simple. It is the author's custom to complete the delivery with the axis-traction instrument. The danger of injuring the pelvic floor with the tips of the forceps blades is reduced to a minimum in the Simpson instrument, as the tips do not stand off from the head. Nagel thinks the axis-traction instrument should be used in all cases. While it offers no advantage in the low operation there is no objection to its use in such cases, and the operator acquires a facility that will stand him in good stead in difficult extractions. The danger of the instrument in injudicious hands lies in the fact that it renders possible the use of an unsafe amount of traction force in difficult cases.—*Brooklyn Med. Jour.*

AN EYE TO BUSINESS.—A certain doctor, who was noted for a keen eye to business, was driving along the street of a country town, when his horse took fright and ran away. He was thrown violently out of his trap and rendered senseless. Presently he recovered a little from his unconsciousness, and, noticing the crowd which had gathered about him, asked, "What's the matter, gentlemen? Anybody hurt? I am Dr. B——. Can I be of any service?"—*Med. Rec.*

The German Reichstag has refused to allow women to study medicine in the German Universities, or to practise the same when qualified.

THE
Canadian Practitioner

A SEMI-MONTHLY REVIEW OF THE PROGRESS OF THE MEDICAL SCIENCES.

Contributions of various descriptions are invited. We shall be glad to receive from our friends everywhere current medical news of general interest.

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TORONTO, APRIL 16, 1891.

FRACTURES EXTENDING INTO JOINTS.

The treatment of these cases by operation, with a view of restoration of the joint function, is a question which has only admitted of discussion since the introduction of antiseptic methods in wound treatment. It is not many years ago since the accepted doctrine was that when one had to deal with a compound fracture, implicating a joint, the proper treatment consisted in amputation of the limb. At the present time the surgeon is asked to consider the advisability of deliberately converting certain simple fractures, implicating joints, into compound fractures, by cutting down upon the articulation, restoring the fragments to their proper position, removing useless portions of bone, and, if necessary, wiring the fragments together, or securing them by some other means, fixed in a proper position. The question is a serious one indeed, and calm judgment is necessary to discuss it fairly. The man who contemplates such operative procedure, especially in large joints, such as the hip or the knee, must have thorough confidence in his ability to keep the wound aseptic, otherwise he is risking the life of the patient in a manner wholly unjustifiable. Methods of performing aseptic surgery are, however, so perfect that there are few surgeons who scruple to undertake the risk, and undoubtedly the results already obtained by many eminent surgeons justify the attempts which are being made to improve upon the older methods of dealing with these cases. In the earlier history of antiseptic surgery, joints had been opened in the course of operations for badly-set fractures. More recently the question has arisen as to the possibility of improving upon the older methods of treating fractured patella and olecranon by cutting down and wiring the fragments; many cases of the kind have been recorded, and the operation is now accepted by many as the best mode of procedure, especially in those cases where the separation of the fragments is so great and so persistent that it is impossible to obtain good position by simpler means.

Mr. Watson Cheyne has lately put on record four cases of fracture, implicating joints, successfully treated by operation: A case of partial fracture of the head of the radius; the patient did not come under Mr. Cheyne's observation until four weeks after the accident, and at that time the forearm was completely pronated and supination was impossible; the forearm was almost completely extended; a loose fragment of bone was found at the posterior part between the olecranon and the head of the radius. The diagnosis was of partial fracture of the head of the radius, the loose and displaced fragment locking the joint. An incision was made; the loose fragment, which was found to be one-half the head of the radius, was removed; adhesions were broken down and the wound closed. The result was complete restoration of function in the joint. A second case of fracture of the neck of the femur, in a woman æt. 52, was successfully treated by opening up the articulation by means of the anterior incision for hip-joint excision; the broken fragments were secured together by pegging, ivory pegs being used. This method of operating by pegging was, in reality, first suggested by Senn, but was never carried into practice before Mr. Cheyne's case was treated. A third case was that of fracture of the olecranon, the coronoid, the external condyle of the humerus, with dislocation of both bones backwards. A free incision was made, the fragments of the olecranon wired, some loose fragments of bone removed, and the dislocation reduced. The case progressed favorably and good movement in the joint obtained. A fourth case of old standing dislocation of the patella, with fracture of the projecting edge, was treated by operative interference; a loose fragment of bone removed and adhesions broken down. The patient recovered good use of the joint and was able to flex it to a right angle. The case reported in the proceedings of the Toronto Medical

Society by Dr. Atherton illustrates the good results which may be obtained under very unsatisfactory conditions; the case was that of compound comminuted fracture of the patella, treated by wiring the fragments and careful cleansing of the joint; the result was perfect restoration of the function of the articulation.

THE PRESENT POSITION OF ANTISEPTIC SURGERY.

Our readers will probably remember Prof. J. William White's address on antiseptic surgery which was delivered at the Post-Graduate Course of the University of Toronto in December last, and published in the *Annals of Surgery* and THE PRACTITIONER of January 1st. It was a reply to Mr. Tait's criticism of Sir Joseph Lister's Berlin address. We publish in this issue some correspondence on the subject, taken from the *University Medical Magazine*, which will be read with interest. Dr. White's letter is strong, able, and practically unanswerable. Mr. Tait's letter is lamentably weak, being scarcely up to the average of other recent utterances of his on the same subject. Probably most will agree that the time has now arrived when Mr. Tait would do well to refrain from any further discussions on the scientific aspects of surgery.

KOCH'S LYMPH.

Koch's lymph, or tuberculin, is now supplied to chemists, who may sell it under certain restrictions. Dr. Libbertz will continue to prepare the lymph under the direction of Professor Koch. It will be sold in sealed bottles containing from one to five cubic centimetres with date of preparation marked. It should not be sold six months after such date, but the bottles may be returned to Dr. Libbertz, who will exchange them for new ones without extra charge. The price will be six marks (shillings) for a cubic centimetre, and twenty-five marks for five cubic centimetres.

ADMISSION OF WOMEN STUDENTS TO THE EDINBURGH ROYAL INFIRMARY.—From the *Edinburgh Medical Journal* we learn that at the meeting of the managers held on 9th February, it was resolved to admit women students of medicine to the Royal Infirmary; and it was accordingly remitted to the medical and surgical staff to give effect to the decision arrived at, which was as follows:—1, Ward visits and clinical lectures shall be given to female students separately from the male students; 2, mixed cliniques may be allowed (on the choice of the lecturers) on special subjects, such as eye, ear, throat, and skin; 3, that under no circumstances whatever shall any ward be utilized twice in the same day for clinical instruction; 4, that, as far as possible, no interference shall be attempted with ward cliniques and lectures already arranged for male students; 5, that at present, or till their numbers exceed thirty, the women students shall keep together in one unit for clinical instruction, thus requiring only one ward or theatre for their instruction at any given time; 6, all women students, before receiving their hospital tickets, must sign a declaration that they will conform to the special rules made by the managers for their instruction.

OPTHALMOLOGY AS A COMPULSORY SUBJECT.—The Opthalmological Society of the United Kingdom are attempting to make attendance upon a special course of instruction in diseases of the eye compulsory. This matter is being ventilated at present because of the fact that there is considerable likelihood of the course of medical instruction in Britain being extended to five years, and thus more time will be available for special work. A committee of the Opthalmological Society has been appointed to wait on the General Medical Council to urge the opinions expressed in the following motion:—"That in view of the course of medical study extending over a period of five years, it is expedient that the Opthalmological Society of the United Kingdom urge upon the General Medical Council the desirability of making the subject of opthalmic medicine and surgery a compulsory part of the ordinary curriculum."

LEMONADE-WINE.—Dujardin-Beaumetz, in the *Bulletin Général de Thérapéutique*, January, 1891, recommends the following drink in typhoid fever and other febrile states:

R.—Red wine,	½ pint.
Tartaric acid,	2 drachms.
Water,	1½ pints.

Meeting of Medical Societies.

THE TORONTO MEDICAL SOCIETY.

March 19th, 1891.

The President, Dr. Spencer, in the chair.

Dr. Dame reported a case of

CHRONIC PURULENT CYSTITIS.

The condition had existed for nine months. A large quantity of pus is passed in the urine daily. The treatment employed has been that of washing out the bladder with iodoform. A solution of argentic nitrate and other washes have been tried, but the improvement in the case has been slight.

In speaking of the case, Dr. Powell stated that he had found iodoform very useful in such conditions. Dr. Sweetnam has used boroglyceride in rather weak solution with good effect both in gonorrhœal and in ordinary cystitis. The solution he uses once daily.

Dr. Spencer narrated the history of a case in which he had employed

OXYGEN INHALATION FOR DYSPNŒA.

The object was to relieve a sudden attack of dyspnœa which came on, in a case of pleurisy, so suddenly that, at the time, it was thought to be due to heart-clot. The blueness and distress of breathing disappeared. Forty-eight ounces of serum were subsequently withdrawn from the right chest.

Dr. McPhedran read a paper on

LARYNGEAL DIPHTHERIA IN THE ADULT.

(This paper appears at page 180 of THE CANADIAN PRACTITIONER.)

In the discussion which followed, Dr. Palmer strongly advocated the identity of laryngeal diphtheria and membranous croup, both from pathological and clinical evidence. Lœffler's bacillus has been discovered in the throats of healthy children and in throats of patients suffering from measles. Klebs has discovered a micrococcus in some cases and in others a bacillus. Dr. Palmer does not quite believe that there can be the presence of the diphtheritic virus without the formation of membrane. Preventive treatment he considers the best. He considered the best local remedies to be salicylic acid, citric acid, and citron juice.

Dr. Sweetnam spoke of the comparative value of tracheotomy and intubation. He firmly believes in the superiority of the latter. He has had five cases of tracheotomy, all fatal; and of seven cases of intubation three have recovered. Intubation interferes less with feeding and with medication than tracheotomy.

Dr. Spencer asked how much time should be allowed to elapse before a patient after recovery from diphtheria should be allowed to mix with others. He referred to one instance in which six cases had resulted by the disease having been communicated from an individual who had been isolated for four weeks.

Dr. McPhedran, in reply, stated that his practice was to keep patients isolated for four weeks after recovery from the disease, making sure that the throat is healthy. The time-guide should not be trusted to alone.

March 26.

The President, Dr. Spencer, in the chair.

Dr. Harrington, for Dr. A. Jukes Johnson, presented a specimen of

GELATINIFORM CANCER OF THE STOMACH.

Dr. Johnson, who was called to see the patient shortly before her death, learned that there had been previously an attack of peritonitis and a condition of cirrhotic liver was suspected. On examination *post mortem* the stomach was found adherent to the abdominal wall and to the adjacent gut. There were peritoneal adhesions throughout the abdominal cavity generally. The stomach was shrunken and the wall was found to be one inch in thickness; the pancreas was adherent to the stomach posteriorly, and was incorporated so closely with the viscus that it seemed to form a portion of the stomach wall. The new growth was most marked towards the pyloric end of the stomach.

Dr. Spencer exhibited a child suffering from

MACRO-GLOSSIA.

The tongue protruded between the lips and teeth and could not be drawn within the mouth. The child was three years of age. She has a sister æt. nine, with a condition very similar, but the latter is mentally deficient. In the child exhibited the lower and upper extremities are unusually large, simulating a condition of elephantiasis.

Dr. Primrose showed a photograph of a child presenting the same condition. He stated that in these cases the lymphatic spaces and vessels are found to be enlarged, and there is hypertrophy of the connective tissue; in this respect the condition of macro-glossia resembles elephantiasis in its pathology, and it is interesting to note that in Dr. Spencer's case the limbs exhibit some of the characteristics of elephantiasis.

Dr. Fere suggested ligation of the lingual artery as a means of diminishing the blood supply to the part.

Dr. Atherton showed a patient who had suffered a

COMPOUND COMMINUTED FRACTURE OF THE PATELLA.

He had received the injury by a kick from a horse, the knee being bent at the time. The patella was broken into four fragments; the upper portion of the bone remained intact, the lower portion was splintered into three pieces, and the fragments were separated three-fourths of an inch. By means of two silver wire sutures the pieces were brought together, the joint was washed thoroughly with 1-40 carbolic lotion. Drainage of the joint was secured by a tube passed to the surface through the posterior portion of the articulation, and a superficial drain was inserted in front. The latter was removed on the fourth day; the former was retained one week. The leg was retained at rest on a posterior Gooche splint and the leg elevated. The patient suffered no pain after the first two days. There was no pus formed at any time; the highest temperature was 100.3 F. on the morning after the accident; it gradually fell to normal. The dressings were changed four or five times during the first ten days, and then left undisturbed for ten days. One month after the accident he was allowed to sit on a chair; eight weeks after the accident a leather splint was applied and he went about on crutches. During the tenth week he was allowed to walk about the street on crutches. On October 25th (eleven weeks after the accident) the wire was removed in consequence of irritation; good bony union had taken place. On February 20th the patient was able to flex the joint to a right angle, and was going about attending to his business as usual.

Dr. Spencer showed a patient who had had a

CYSTIC TUMOR DISCHARGING CONTENTS INTO THE ALIMENTARY CANAL.

Three years ago she had a tumor in the left hypochondriac region, causing displacement of the heart and dyspnœa. It enlarged during the menstrual periods. Before the tumor appeared she used to suffer from what she called "bilious attacks" and vomited mucous material on these occasions. She was in the General Hospital for a time and the tumor diminished somewhat under treatment. Last summer Dr. Spencer passed a hypodermic needle into the tumor with negative results. Two months ago, while hanging up clothes on a line, the tumor seemed to collapse suddenly; the same evening she said she passed "corruption" by the rectum and vomited a similar material. Since that time she has passed at intervals like material per rectum, but there has been no return of the tumor. Some of the vomited matter was exhibited; it was a mass of trembling, jelly like material, apparently mucoid in character.

Dr. McPhedran exhibited a patient suffering from

PRIMARY MUSCULAR ATROPHY.

The patient is thirty-two years of age; the trouble began seven years ago. His elder brother died at the age of twenty-six years (nine years ago) of the same disease. The wasting of the muscles, which is marked, began in the forearms and has extended gradually. It now involves most of the muscles of the body. There is typical "wrist-drop"; the supinator longus is entirely gone. There is little strength in the trapezius, biceps, coraco-brachialis, pectorals, latissimus dorsi, supra and infra spinatus, and all these muscles are markedly wasted. On the other hand, the levator anguli scapulæ, rhomboids, and teres muscles, are all fairly good. The serratus magnus is atrophied, and the "winged scapula" is present. The muscles of the neck (except the trapezius) are not affected. The face muscles are involved, especially on the right side, as observed when he attempts to whistle; the eyes are widely open and he cannot close them firmly. The leg muscles are involved, especially on the right side; the superior groups are more affected than the

posterior. The respiratory and abdominal muscles are not involved. There is control of the rectum and bladder; the muscles of the palate, pharynx, and fæces, are all right; speech is not clear, but probably the condition of the lips accounts for this. The tongue muscles are normal. The muscles of the hand are not affected. There is no derangement of sensation; the reflexes are weak, but not abolished. There has not been much change in the man's condition for the past two years. The faradic and galvanic electrical reaction are normal as far as ascertained; there is no reaction of degeneration.

Dr. Graham considered this a rare form of disease. His attention had first been called to the condition a year ago by Dr. Pringle. There are one or two points in which this case does not correspond with the cases previously described. (1) There is apparently fibrillar twitching in this case. (2) There are also spasmodic contractions of muscles. These conditions have not been described in primary muscular atrophy. The condition of the mouth muscles might be thought due to bulbar paralysis, but there is no dysphagia. The case is probably one of primary muscular atrophy. The fatal termination in these cases is usually due to some intercurrent condition, frequently tuberculosis.

Dr. McPhedran stated that he is not satisfied with the present view as to the pathology of the condition. How could muscles atrophy primarily if the trophic nerve supply were normal? It is probable that in future some nerve lesion will be found. The disease in all probability begins in the nervous system, and the muscles atrophy secondarily.

Dr. McPhedran then exhibited a case of

ELEPHANTIASIS LYMPHANGIECTODES.

A boy, ten years of age, in whom one leg (the left) is one inch longer than its fellow, and there is a general increase in the size in the whole limb as compared with the other. The boy had two attacks of pain and swelling of the limb when an infant, and a third attack when three years of age. The prepuce is hypertrophied; the lengthening of the limb is uniform in all parts. The pathology of the condition is probably that it is due to some obstruction in the lymphatics.

Dr. Primrose spoke of the pathology of the disease. He was not satisfied with Dr. McPhedran's view that it was due to lymphatic obstruction. He quoted Cohnheim in stating that the lymphatics of the limb may be entirely obliterated without even causing œdema. He was inclined to regard Dr. McPhedran's case as one of true hypertrophy, due to increase of blood supply to the part. He did not think it a case of ordinary elephantiasis, where the subcutaneous tissues are chiefly affected in the enlargement of the limb.

Dr. Graham referred to two cases of a similar character which had come under his observation. The condition has been well described by Hebra as elephantiasis lymphangiectodes. It differs from the ordinary elephantiasis arabum in several points, one of which is the fact that it is usually congenital in origin.

Dr. Cameron had seen similar cases, and he considered the question of the pathology of the condition proven. Cutting off the blood supply is the most rational method of treatment. It has been found that the state of the limb may be associated with lymphatic obstruction; the question is whether the hyperæmia in elephantiasis is primary or secondary.

Dr. Peters referred in his remarks to the treatment. Elephantiasis arabum has been treated for many years by ligation of the main artery of the limb. A Dublin surgeon was the first to practise this, and he dressed several cases successfully. The plan of treatment seems advisable in this instance. The disease is certainly not elephantiasis arabum, because the parts are all equally enlarged, proportionately throughout the limb. All the circumferences are increased; the soft parts and bones are proportionately enlarged. Dr. Peters looks upon the case as hypertrophy rather than elephantiasis. The prepuce shows dilated lymphatics; also a cutaneous patch below the patella presents a similar condition.

April 2.

The President, Dr. Spencer, in the chair.

Dr. C. O. Ryerson read a paper on

THE MEDICAL ASPECTS OF JAMAICA.

There is great diversity of temperature in Jamaica, varying from 80–86° at the sea coast to 45–50° on the tops of the mountains, com-

bined with a peculiar dryness, which renders the climate of the mountains particularly delightful; this remark is specially applicable to the Santa Cruz mountains. In this favored region the average maximum temperature is 75°, the minimum 66.8°, mean 71.1°. The record of the rain-fall goes to show that Jamaica possesses a comparatively dry climate. May and November are the two wet months as a rule. The climate is said to be very similar to that of Algiers. A consideration of these various points about the climate leads one to conclude that the island is an excellent health resort for consumptive patients, and so it has proved to be. There is warmth, dryness, lightness of atmosphere, a small range of temperature, and invigorating sea and mountain air.

There are certain thermal springs on the island. The bath of St. Thomas—alkaline in character—is specially good for the treatment of rheumatism, scrofula, and syphilitic skin diseases, also for gout. The Milk River bath is one of a similar character. There are two strong chalybeate springs and a sulphurous spring on the island.

In the Government medical service there are eighteen hospitals, with one large central hospital at Kingston of 350 beds. The pay of medical officers varies from £100 to £1200 per annum.

The quassia tree grows on the island, and patients collect their own chips and make infusions. There are quite a number of Canadians practising there. Of the endemic diseases, there is that produced by an insect known as the jigger; it gets into the foot and produces indolent sores; when neglected these cases sometimes result in tetanus. Frambesia is common. Leprosy is not uncommon and syphilis by no means so. Gonorrhœa is remarkably severe and even proves fatal at times. Reynaud's disease sometimes occurs. Malarial disease is of course the most common; sometimes the symptoms simulate locomotor ataxia, but quinine and arsenic effect a cure. Yellow fever has been very rare on the island since the institution of proper hygienic measures. Fragilitas ossium occurs in Jamaica—a disease in which the bone becomes so fragile that it is easily fractured by slight muscular violence. A case in Kingston hospital was seen where there had been fracture of the clavicles, humerus, several ribs, and the neck of the femur; union was obtained without difficulty. The natives prefer "bush-doctors" to white physicians; they are very superstitious and believe firmly in "duppies," "loogaroos" or "vampires," "love-spells," etc.

Dr. Spencer spoke of Jamaica as he found it in 1871. Yellow fever was by no means rare at this time, and small pox was still more common. Since then Jamaica has become quite a health resort.

Dr. Graham spoke of a peculiar disease which occurs in Jamaica, characterized by a furrow forming around the toe; this becomes deeper and deeper until eventually the toe drops off. At one time it was thought to be due to mutilation, but now it is believed to have a special pathological history.

Dr. Machell was glad to learn that the temperature on the island varies so little. Why is it that we send consumptive patients away to Southern California, when we can send them nearer home and give them the benefit of a sea-voyage into the bargain?

Dr. Oldright, in referring to the stamping out of yellow fever, stated that in Jamaica we have one of the notable instances of diminished death rate after improvement in sanitary conditions.

Dr. Greig asked if beri beri were common in Jamaica, and referred to the close relation this disease has to multiple neuritis.

Dr. Ryerson, in his reply, confirmed the remarks which had been made concerning Jamaica as a model health resort for consumptives and those suffering from bronchial troubles.

Hospital Reports.

LARGE URINARY CALCULUS REMOVED FROM BLADDER PROLAPSED WITH UTERUS AND RECTUM.

BY JAMES LESLIE, M.D.,
St. Joseph's Hospital, Hamilton.

Mrs. G., æt. 56 years, widow, mother of several children. Has suffered from falling of the womb for twenty-five years. This has been increasing, and when seen on 25th January,

1889, she had incontinence of urine, constipated bowels, and could with difficulty lie or walk. Her easiest position seemed to be half reclining and resting on the right hip near the edge of a chair, with the legs separated. A protruding, irreducible tumor, with a whitish, hard, dry surface, excoriated at several points, presented from between the labia. It measured from attached and smaller end behind to free and larger end, where os was, six and a half inches, and from os to attached end in front six inches, the circumference at thicker end being twelve and three-quarter inches. An examination revealed prolapsed bladder and rectum with complete prolapse of vagina and uterus. The prolapsed bladder contained a calculus. While under the influence of chloroform an incision was made into the bladder in mesial line from its neck towards its fundus, and the calculus removed. The wound was closed by interrupted sutures of silk, and the protruding mass returned to its normal position. Ten days afterwards, when the patient was up and straining at stool, prolapsus of the unsupported uterus, etc., again took place, and when reduction was being effected the recent union of the incised wound gave way, and thus was established vesico-vaginal fistula. The calculus measured at its greatest circumference six and five-eighth inches, and at its least four and a quarter inches, and weighed eight hundred and eighty-four grains. On 10th October, 1890, she was operated upon in St. Joseph's Hospital, Hamilton, for vesico-vaginal fistula, and on 29th October, 1890, left for her home cured.

The above report is attached to a urinary calculus in St. Joseph's Hospital Hamilton.

Personal.

PROFESSOR HARTNACK, of microscope fame, is dead.

DR. S. STEWART contemplates leaving Wallaceburg.

DR. OSLER spent a couple of days in Toronto at Easter.

DRS. J. E. GRAHAM and A. A. MACDONALD, of Toronto, visited Baltimore, April 2nd, and remained about ten days.

Births, Marriages, and Deaths.

BIRTHS.

GREENWOOD.—At St. Catharines, on Thursday, March 26th, the wife of Frederic Greenwood, Esq., M.D., of a son.

GRAFTON.—At 540 Spadina Avenue, April 4th, the wife of Dr. C. Steuart Grafton, of a son.

WRIGHT.—At Oak Lake, Man., the wife of Dr. Henry Wright, of twin daughters.

DEATHS.

GRAY.—At Riverside, Montana, on Easter Sunday, March 29th, Harry H. Gray, M.D., late of Toronto, in the 27th year of his age.

Therapeutic Notes.

CREOLIN IN INFANTILE DIARRHŒA.—According to *La Semaine Médicale*, Schwing recommends the following mixture for infants who are suffering from diarrhœa:

℞.—Creolin . . . . 1 to 3 drops
Cinnamon water . . . 2½ ounces.
Syrup . . . . . ½ ounce.

Mix, and administer a coffeespoonful every two or three hours. For older children, the following may be employed:

℞.—Creolin . . . . . 15 grains.
Sugar . . . . . 75 "

Mix, and divide into from five to ten powders, and administer from one to two powders each day.—*Med. News.*

AN EMULSION FOR TAPEWORM.—*La Semaine Médicale* gives the following prescription of La Mere for the treatment of tapeworm:

℞.—Extract of male fern, 1½ drachms.
Calomel, 7 grains
Distilled water, Syrup of gum arabic, of each ½ ounce.
Powdered gum arabic, a sufficient quantity to make an emulsion.

Before this mixture is administered it should be well shaken, and the patient should be directed on the day previous to its use to subsist entirely upon a milk diet. It is stated that the worm will be expelled in from thirty to forty minutes after the administration of this medicament, if these directions are carefully followed. In children aged from six to twelve years, one-half this quantity should be given.

Miscellaneous.

RESULTS OF RECENT EXAMINATIONS IN MEDICINE.—QUEEN'S UNIVERSITY.—The following students of the Royal College of Physicians and Surgeons, Kingston, passed the first examination at Queen's University:—Geo. Burrows, James Brady, J. M. Campbell, Andrew Carmichael, Sidney M. Davis, E. B. Echlin, B.A., W. A. Empey, Ignatius F. Foley, John F. Fowkes, Robert J. Gardiner, William W. Genge, James F. Gibson, Samuel D. Green, Andrew Haig, M.A., Edgar D. Harrison, D. Herald, W. J. Johnston, John F. Kennedy, William Kidd, Frank C. Lavers, George P. Meacham, John Moore, Allan E. McCall, B.A., John A. McCuaig, Duncan N. McLennan, James McLellan, J. Evan McNee, Jeannette Murray, John H. Oldham, Margaret O'Hara, Nelson Raymond, E. B. Robinson, Michael D. Ryan, William J. Scott, James E. Spankie, W. A. Stewart, Archibald J. Valleau, Jeannette Weir, James W. White, Arthur C. Wilson.

Herbert A. Parkin has passed all his classes, and will receive his degree on reaching the age of 21 years.

The hospital surgeons are: Messrs. Thomas H. Balf, Smith's Falls; Isaac Wood, B.A., Kingston; A. Lockhart, Kingston.

The first year silver medal was won by Walter T. Connell, Spencerville.

The Robson-Roose prize in Pathology was won by Andrew Haig, M.A., Meine.

The Rivers-Wilson prize in Sanitary Science and Jurisprudence was won by J. W. Campbell, of Toronto.

TRINITY UNIVERSITY—*Primary Examination.*—Certificates of honor—C. B. Shuttleworth, first silver medallist; J. T. Robinson, second silver medallist; H. J. McGill, C. McPhail, R. V. Fowler, W. Glaister, R. Brodie, C. H. Bird, R. E. Macdonald, A. B. McGill, T. Douglas, E. Tomlinson, F. J. Burrows, W. H. Cartwell, B. N. Coates, D. D. Wickson.

Class I.—W. Andrews, T. J. Dunn, R. E. Darling, J. K. M. Gordon.

Class II.—N. Campbell, E. Orton, R. S. Dowd, W. H. Tufford, J. R. Bingham, H. J. Denovan, W. Doan, J. C. Stinson, J. B. Ferguson, W. J. Ross, Miss M. M. Brander, J. J. P. Armstrong, W. J. Arnott, W. C. Belt, J. A. G. Wilson, F. W. Mulligan, Miss N. Rodger, T. W. Carland, W. A. Thomson, M. S. Lane.

Class III.—R. T. Corbett, J. H. Duncan, G. D. M. Ruthven, P. J. Maloney, Miss J. Ryan, W. J. Proctor, H. H. Alger and H. P. R. Temple equal, J. E. King, J. R. Rosebrough, J. Bowie, C. Carter, A. B. Singleton, N. Anderson, M. J. Farrish.

Final Examination for M.D.C.M.—Certificates of Honors—J. Third, gold medallist; J. T. Fotheringham, silver medallist; C. Mackay and J. Sutherland and C. A. Temple equal; R. Knechtel, C. C. Fairchild, J. R. Walls.

Class I.—W. D. D. Herriman and T. C. Irwin and D. C. Jones equal; J. B. Martyn, D. Johnson, W. Montgomery, J. J. Moore, W. G. Sprague and R. H. White equal; G. D. Farmer and F. A. Quay equal; A. A. Sutherland, G. R. Mark and H. A. L. Reid equal.

Class II.—Miss L. K. Mead, T. S. Glenn, J. A. Ashbaugh, A. C. Hunter, A. W. Nixon, J. C. Suter, F. R. McBrien, W. J. Scott, J. W. Shaw, P. Robertson, C. F. P. Abraham, J. J. Danby, J. Crooks, Miss L. Graham, R. Archer, J. McQueen, T. S. Farncombe, J. N. Oldham.

Class III.—W. E. Brown, Miss M. A. Griffin, A. E. Henry, W. A. Macpherson, J. T. Kennedy, F. L. Switzer, D. B. Alexander, A. W. Bell, F. E. Spilsbury, A. J. Murray, W. J. Awty, L. E. Bolster, D. B. Bentley, A. H. Hough, J. P. Russell,

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The Medical Record says Mexico has nine medical schools, in each of which the course of study is six years.

Hot claret is said to be a good gargle for acute sore throat.

Dr. Libbertz states that in the preparation of tuberculin it is impossible to prevent isolated tubercle bacilli from occasionally, though very rarely, getting into the liquid, but that action of long continued boiling heat has rendered them perfectly harmless.

The 59th annual meeting of the British Medical Association will commence July 28th, at Bournemouth.